

REMARKS

The Office action dated August 2, 2006, has been carefully reviewed and the foregoing amendment has been made in response thereto.

Claims 13-17 and 37-38 stand rejected under 35 USC 103(a) as being unpatentable over Babin et al. (USP 5,825,176) in view of Tokunaga et al. (USP 7,019,516).

The Office action acknowledges that the second component 308 of the '176 patent is made of low carbon steel; however it says component 308 is formed of material having a relatively low magnetic permeability. In fact, a material having a low carbon content has a high magnetic permeability; a material having high carbon content has low magnetic permeability. The low carbon steel from which component 308 of the '176 patent is made has high magnetic permeability. Claims 13 and 37 of the subject application recite that the second component has relatively low magnetic permeability. The relative magnetic permeability of 1010 carbon steel is about 3,800, according to the ASM Handbook. The relative magnetic permeability of the second component recited in the subject claims is about 25. From this it can be seen that the '176 patent teaches that component 308 has high magnetic permeability material, and it neither discloses nor suggests that component 308 should have low magnetic permeability.

The Office action acknowledges that the '176 patent fails to disclose a second component that is continuous over a path between the sensor and target component. The Office action also acknowledges that the '176 patent fails to disclose a second component that includes a source of magnetic flux. The '516 patent was cited for allegedly disclosing a magnetic sensor unit wherein the target (2, Fig. 1B) is continually hidden from view of the sensor (5) by a second component (6). The Office action concludes that it would have been obvious to one skilled in the art to modify the device of the '176 patent in view of the '516 patent in order to hide the sensor from the view of the target. The second component (6) of the '516 patent is a motor yoke, which does not rotate. Driveshaft 3 rotates. Claims 13 and 37 recite that the second

component rotates in a path between the target and the sensor. There is no suggestion, disclosure, or teaching in the '516 patent that the motor yoke is a rotating component. The Office action appears to be relying on the disclosure of the present invention in this respect.

The '516 patent discloses that motor yoke (6) collects leaking magnetic flux from the motor magnets 231, 232, and returns the leaking magnetic flux to the motor magnets 231, 232. The motor yoke (6) serves as a magnetic shield for the Hall element (5) so that the motor yoke reduces the influence of the leaking magnetic flux on the Hall element. The function of the motor yoke (6) clearly indicates that the magnetic permeability of the material from which the motor yoke is formed is high, in order to efficiently collect and return the leaking magnetic flux to its source in the motor magnets. A material having low magnetic permeability would be ineffective in performing the disclosed function of the motor yoke (6).

Neither the '516 patent nor the '176 patent discloses a second component having low magnetic permeability. Instead, each of those references indicates that the second component has high magnetic permeability. It should be noted that the device disclosed in the '516 patent is not a rotational speed sensor, but is in fact a position sensor. The combination that would result by combining that which is disclosure in the '516 patent and '176 patent neither teaches nor suggests the device defined by claims 13-15, 37 and 38.

Claims 1-3 and 6-12 stand rejected under 35 USC 103(a) as being unpatentable over the '176 patent in view of the '516 patent. Again, the Office action states that the second component is made of low carbon steel. It says that the second component is formed of material having a relative magnetic permeability equal to or less than 25.0. In fact, the relative magnetic permeability of 1010 carbon steel is about 3,800, according to the ASM Handbook, whereas the magnetic permeability of the second component disclosed in the subject application is about 25. Neither the '176 patent nor the '516 discloses, teaches or suggests that the second component is made of a material having relatively low magnetic permeability. Instead, they teach and

suggest that the second component has and should have relatively high magnetic permeability.

Claims 2, 3, and 6-12 depend from and add limitations to Claim 1. Having patentably distinguished Claim 1 over the prior art, claims 2, 3, and 6-12 also are patentably distinguished over the prior art.

The Office action suggests, but does not say, that Claim 16 is rejected, nor does it indicate the statute under which claim 16 is rejected. I assume that claim 16 stands rejected under 35 USC 103. The second component (308) disclosed in the '176 patent is formed of low carbon steel, which has a relatively high magnetic permeability, in the vicinity of 3,800 according to the ASM Handbook. Similarly, the second component of the '516 patent motor yoke (6), has a relatively high magnetic permeability. But Claim 16 states that the second component has a relative low magnetic permeability, equal to or less than 25.0. Neither of these references teaches or suggests a system for determining rotational speed of a target component having a second component interpose between the target and the sensor, with the target component having magnetic permeability in the recited range.

Claims 9-12 stand rejected. The Office action acknowledges that Babin and Tonkuaga fail to disclose that the stainless steel is formed by stamping. The Office action acknowledges that the second component of the '176 is formed of low carbon steel, not stainless steel. The '516 patent does not disclose the material of the motor yoke (6). Claims 9-12 recite specific references to stainless steel, but the prior art makes no disclosure with respect to a second component being formed of stainless steel. Claims 9-12 should not be rejected with reference to the cited prior art references.

Claim 4 stands rejected under 35 USC 103(a) as being unpatentable over the '176 patent in view of the '516 patent as applied to claim 1, and further in view of Garshelis (USP 6,260,423). The cited text of the '423 patent states that plastic deformation caused austenite to convert to a magnetic martensite (permeability in the range from 10-100). The Office action concludes from this statement that the lower the concentration of martensite, the lower the permeability of the material, presumable

magnetic permeability. That conclusion does not follow from the cited text. The Office action then concludes that it would have been obvious to one of ordinary skill in the art to have modified the device of the '176 patent in view of the '516 patent and further in view of the '423 patent because providing a lower concentration on martensite in the second component would result in decreased permeability of the second component. Claim 4 recites that the material of the second component has a concentration of martensite that is less than 30 percent. None of the three references cited from the prior art suggests a concentration of martensite of that range. The rejection of claim 4 should be rejected sustained without a disclosure, teaching or suggestion related to the claim. There is no support in the cited prior art for the concentration of martensite expressed in claim 4.

Claim 5 stands rejected under 35 USC 103(a) as unpatentable over the '176 patent and the '516 patent as applied to Claim 1 above, and further in view of Hansen (USP 6,528,989). The Office action acknowledges that neither Babin nor Tokunaga disclose a second component is formed of a member of the grouping consisting of aluminum, titanium, and stainless steel. The Office action cites the '989 patent for disclosing a magnetic tracker. In the same sentence it makes an incoherent reference to aluminum, titanium, and stainless steel. The Office action cites text from the '989 patent that discusses nothing with respect to the material of any component of a magnetic tracker or any other assembly. There is no basis for the rejection Claim 9 with respect to the three cited prior art references, on the basis of which the rejection under 35 USC 103(a) has been made.

None of the claims has been amended. They are all patentable over the cited prior art references.

This application was filed nearly three years ago, on September 22, 2003. It has been rejected three times since November 29, 2005, the date of the first Office action on the merits. In fairness to the Applicant, I suggest, with due respect to the examiner and the Office, that the application is in condition for allowance and should be passed to issuance.

Respectfully submitted,


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